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EXAMINER	
KARLSEN, ERNEST F	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SCOTT DEWEY and JOHN WHEAT

Appeal 2009-004481
Application 10/828,420
Technology Center 2800

Decided: October 20, 2009

Before EDWARD C. KIMLIN, CHARLES F. WARREN, and TERRY J. OWENS, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-19. We have jurisdiction under 35 U.S.C. § 6(b).

Claim 1 is illustrative:

1. A fuel cell system comprising:

a high voltage component;

a fuel cell stack including a positive terminal and a negative terminal;

a first conductor electrically coupled to the positive terminal and the high voltage component;

a second conductor electrically coupled to the negative terminal and the high voltage component, wherein a current propagating through the first and second conductors is in opposite directions;

a magnetic field concentrator including an opening, said first and second conductors extending through the opening, wherein a current propagating through the first and second conductors generate magnetic fields that are concentrated by the magnetic field concentrator; and

a magnetic sensor positioned relative to the magnetic field concentrator, said sensor detecting the magnetic field in the magnetic field concentrator and providing a difference signal representative of the difference between the current propagating through the first conductor and the current propagating through the second conductor.

The Examiner relies upon the following references as evidence of obviousness (Ans. 2):

Burns	3,621,334	Nov. 16, 1971
Kurokami	7,079,406 B2	Jul. 18, 2006

Appellants' claimed invention is directed to a fuel cell system comprising, *inter alia*, a magnetic field concentrator (32) having an opening through which first and second conductors extend. Current propagated through the conductors generates magnetic fields that are concentrated by the concentrator and sensed by a magnetic sensor (42). Current flows through the conductors in opposite directions and, during normal stack operation, the current in both conductors is the same, thereby generating a zero differential which is detected by the sensor. When the system fails by

the high voltage component (68) becoming electrically coupled to the ground, the current propagating through the conductors will be different, and the difference between the magnetic fields generated by the conductors will be detected by the sensor, which will in turn trigger a signal to shut the system down.

Appealed claims 1-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Burns in view of Kurokami.

Appellants do not present separate arguments for any particular claim on appeal. Accordingly, all the appealed claims stand or fall together with claim 1.

We have thoroughly reviewed each of Appellants' arguments for patentability. However, we are in complete agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly, we will sustain the Examiner's rejection for essentially those reasons expressed in the Answer, and we add the following primarily for emphasis.

Appellants do not dispute the Examiner's factual determination that Burns, like Appellants, discloses a ground fault sensing apparatus comprising a magnetic field concentrator having an opening through which first and second conductors extend. Appellants acknowledge that the magnetic core 30 of Burns operates in the same manner as the claimed magnetic field concentrator, i.e., as a sensor which detects a differential in the magnetic fields generated by the two conductors when a ground fault occurs such that the system can be shut down. As acknowledged by the Examiner, Burns does not specify that the ground fault sensing apparatus is

part of a fuel cell system. However, Kurokami teaches that it was known in the art to use a ground fault detector with a variety of power sources, including a fuel cell. Consequently, we find no error in the Examiner's legal conclusion that it would have been obvious for one of ordinary skill in the art to employ the particular ground fault sensing apparatus of Burns in a fuel cell system. In our view, Appellants' acknowledgement in the present Specification that fault isolation detection systems were known to be used in fuel cell systems for safety purposes underscores the obviousness of using the particular system of Burns. Appellants have advanced no reason why one of ordinary skill in the art would have been dissuaded from using the ground fault sensing circuit of Burns in a fuel cell system.

Appellants submit that "there is not enough detail in the discussion of Kawakami [sic, Kurokami] to show that the current detector 12 employs magnetic field cancellation, as claimed" (Reply Br. 1, second para.). However, the particulars of a circuit using magnetic field cancellation are disclosed by Burns.

Appellants also submit that load 70 of Burns and system 3 of Kurokami are not described as high voltage loads. However, as pointed out by the Examiner, the claim language "a high voltage component" is relative in nature and, furthermore, Appellants concede that the use of high voltage components was well-known in the art. Appellants have not made any argument that one of ordinary skill in the art would not have considered the ground fault sensing systems of Burns and Kurokami to be suitable for a system that comprises a high voltage component.

As a final point, we note that Appellants base no argument upon objective evidence of non-obviousness, such as unexpected results.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a) (2008).

AFFIRMED

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